

AFL Injury Report: Season 2004

Dr John Orchard, Dr Hugh Seward, AFLMOA

Released: June 15 2005



Highlights:

- Presents findings from the 13th consecutive year of injury surveillance for the AFL, the last eight years with 100% compliance.
- Season 2004 was another low year for injuries compared to the long-term average, with the second lowest injury prevalence since the survey was commenced.
- Discusses the trends regarding knee posterior cruciate ligament (PCL) injuries and the rationale of recent rule changes to the centre bounce.
- Details a long-term trend downwards of the number of players requiring knee reconstructions for anterior cruciate ligament (ACL) injuries.
- Shows ongoing low rates of significant concussions in the AFL.
- Again reveals the hamstring strain to be the most common and most prevalent injury in the AFL.
- Shows an ongoing trend for more conservative returns from injuries, particularly muscle strains, with fewer recurrences. The recurrence rate for hamstring strains was the lowest ever recorded.

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INTRODUCTION

The thirteenth season of the AFL Injury Survey was completed in 2004. The initial survey year (1992) included Australian football, rugby league and rugby union injuries¹ and the AFL has sponsored surveillance of its own competition ever since. The public release of the annual report, which has been made since 1996², makes the AFL injury survey the world's longest running professional injury survey in sport that has been publicly released on an annual basis^{3,4}. The injury survey also has a pivotal position in guiding the AFL Research Board to fund projects which study injuries that are common, severe and/or increasing in incidence in AFL players. Since 1997, the injury survey has accounted for every case of senior listed players missing games through injury in the home & away season³. In 2001 this was extended to include rookie listed players and finals matches.

The basis for surveillance methods in the AFL is the Van Mechelen paradigm⁵. Table 1 shows the stages of the Van Mechelen paradigm and summarises how the AFL injury survey has approached each of these over the past decade.

Table 1 - Van Mechelen's recommendations for injury prevention

Stages of injury prevention	AFL injury survey status
1. Identify frequency of common and serious injuries	This has been done for the past 13 years
2. Identify risk factors (both intrinsic and extrinsic) for the most common and serious injuries	Some risk factors are established for muscle strains, knee injuries, groin injuries, concussion etc.
3. Institute preventative programs based on modification of reversible risk factors	Interventions have been made at AFL level (changes to ground preparation, video surveillance, rule changes) and at club level (improved diagnosis, injury prevention programs, more conservative strategies for return from injury)
4. Monitor success of intervention with ongoing surveillance	Injury incidence and recurrence rates have been dropping over the past 8 years, with injury prevalence also at a historically low level

METHODS

The methods of the injury survey are now well established and have been previously described in detail³. Player movement monitoring essentially requires that all clubs define the status of each player each round to be either: (1) playing AFL football (2) playing football at a lower level (3) not playing football due to injury or (4) not playing football for another reason.

The definition of an injury is "any medical condition that prevents a player from participating in a regular season (home and away) or finals match". The major measurement of the number of injuries occurring is *seasonal injury incidence* measured in a unit of *new injuries per club per season* (where a club is defined as 40

players and a season is defined as 22 rounds). The major measurement of the amount of playing time missed through injury is *injury prevalence* measured in a unit of *missed games per club per season*, or alternatively *percentage of players unavailable through injury*. The recurrence rate is the number of recurrent injuries expressed as a percentage of the number of new injuries. A recurrent injury is an injury in the same injury category occurring on the same side of the body in a player during the same season. Therefore, by this definition, an injury of one type that recurred the following season was defined as a new injury in that next season.

All injury rates are adjusted to account for differing player list sizes and number of matches per club in each season, so that the injury rates reported each season represent a hypothetical club with 40 listed players participating in 22 matches.

RESULTS

Weekly player status

Table 2 details player status on a weekly basis over the past eight seasons. The 'average' status of a club list of 43 players in any given week for 2004 was: 34 players playing football per week, 6-7 missing through injury and 2-3 missing through other reasons (such as suspension, being used as a travelling emergency, team bye in lower grade etc.). The injury prevalence (proportion of players missing through injury) was higher in 2004 than in 2003 but still low in terms of the historical average.

Table 2 - Average weekly player status by season

Status	1997	1998	1999	2000	2001	2002	2003	2004
Playing AFL	21.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
Playing lower grade football	11.8	11.4	11.4	11.3	12.9	12.1	12.0	11.9
TOTAL playing	32.8	33.4	33.4	33.3	34.9	34.1	34.0	33.9
Not playing because of injury	7.7	6.7	6.4	6.2	6.7	6.6	5.7	6.4
Not playing for other reasons	1.9	1.6	1.8	1.8	1.8	2.3	2.5	2.5
TOTAL not playing	9.6	8.3	8.3	8.0	8.5	8.9	8.2	8.9
Players in injury survey (per club)	42.3	41.7	41.7	41.4	43.4	43.0	42.2	42.8
Injury prevalence (%)	18.1	16.1	15.4	15.0	15.5	15.3	13.5	14.9

Injury incidence

Table 3 details the incidence of the major injury categories. The injury incidence (number of new injuries per team per season) continued in 2004 at a level which was historically low. Hamstring strains have been the most common injury in every year of the survey, with generally 6 of these injuries occurring per club per season and these injuries were again very common in 2004. Concussion, patella and Achilles tendon injuries, calf strains and knee medial ligament injuries all recorded historically low incidence rates in 2004. There was no injury category that showed a substantial increase in injury incidence in season 2004.

Table 3 - Injury incidence (new injuries per club per season)

Body area	Injury type	1997	1998	1999	2000	2001	2002	2003	2004
Head/neck	Concussion	0.6	0.7	0.5	0.6	0.7	0.7	0.3	0.3
	Facial fractures	0.8	0.7	0.8	0.7	0.4	0.4	0.6	0.8
	Neck sprains	0.1	0.2	0.2	0.2	0.1	0.0	0.1	0.1
	Other head and neck injuries	0.2	0.2	0.2	0.1	0.3	0.2	0.3	0.2
Shoulder/arm/elbow	Shoulder sprains and dislocations	1.0	0.9	0.7	0.7	1.1	0.9	1.3	1.0
	A/C joint injuries	0.9	0.9	0.6	1.3	0.9	1.1	0.3	1.1
	Fractured clavicles	0.4	0.4	0.3	0.5	0.3	0.3	0.2	0.6
	Elbow sprains or joint injuries	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.3
	Other shoulder/arm/elbow injuries	0.6	0.5	0.2	0.5	0.5	0.8	0.5	0.4
Forearm/wrist/hand	Forearm/wrist/hand fractures	1.1	1.7	1.7	1.4	0.8	1.1	0.8	1.1
	Other forearm/wrist/hand injuries	0.4	0.4	0.4	0.7	0.3	0.4	0.9	0.4
Trunk/back	Rib and chest wall injuries	1.1	0.5	0.8	0.7	0.4	0.8	0.7	0.6
	Lumbar and thoracic spine injuries	1.9	1.6	1.5	2.2	1.6	0.9	1.0	1.7
	Other trunk/back/buttock injuries	1.0	0.9	1.0	0.5	0.4	0.4	0.4	0.6
Hip/groin/thigh	Groin strains and osteitis pubis	4.1	3.3	3.1	3.0	3.5	3.9	2.8	3.1
	Hamstring strains	6.8	6.4	6.8	5.8	6.1	4.5	5.9	6.3
	Quadriceps strains	2.5	3.0	2.4	2.0	1.6	1.7	2.0	1.9
	Thigh and hip haematomas	1.3	1.3	1.1	1.1	0.6	1.0	0.3	1.1
	Other groin/hip/thigh injuries	0.4	0.2	0.3	0.4	0.3	0.3	0.4	0.3
Knee	Knee ACL	1.2	0.8	0.7	0.5	0.9	0.8	0.6	0.6
	Knee MCL	0.7	1.3	1.2	0.9	1.2	0.9	1.0	0.7
	Knee PCL	0.6	0.3	0.7	0.5	1.0	0.4	0.5	0.7
	Knee cartilage	0.9	1.1	1.1	1.2	1.9	1.3	1.7	1.2
	Patella injuries	0.2	0.4	0.1	0.2	0.2	0.4	0.1	0.1
	Knee and patella tendon injuries	0.5	0.6	0.7	0.7	0.5	0.8	0.7	0.4
	Other knee injuries	1.4	0.4	0.9	1.3	0.8	0.5	0.7	0.7
Shin/ankle/foot	Ankle sprains or joint injuries	2.7	2.8	2.1	2.7	2.0	2.5	2.6	2.6
	Calf strains	1.9	2.3	1.4	1.9	1.6	2.2	1.6	0.9
	Achilles tendon injuries	0.4	0.3	0.5	0.4	0.2	0.4	0.4	0.2
	Leg and foot fractures	0.5	0.8	1.1	0.6	1.0	0.9	0.5	0.5
	Leg and foot stress fractures	0.8	0.7	0.8	0.5	0.9	0.7	0.9	0.9
	Other leg/foot/ankle injuries	1.9	1.7	1.3	1.4	1.7	0.9	1.5	1.7
Medical illness	Medical illnesses	2.5	2.8	1.6	1.9	1.8	2.3	2.4	2.0
TOTAL INJURIES PER CLUB		41.9	40.3	36.9	37.4	35.8	34.3	34.1	34.9

Injury recurrence

Table 4 shows the rate of recurrence of the some of the common injury types, particularly muscle strains which have a comparatively high recurrence rate. Some other injuries, such as fractures, concussion and ‘cork’ injuries have a low recurrence rate. The issue of recurrence for muscle strains is the subject of ongoing research ⁶. The rate of injury recurrence has been showing a steady decline over the last 7 years, with 2004 having the lowest recurrence rate on record.

Table 4 - Recurrence rates (recurrent injuries as a percentage of new injuries)

Injury type	1997	1998	1999	2000	2001	2002	2003	2004
Hamstring strains	37%	36%	30%	39%	25%	30%	27%	22%
Groin strains and osteitis pubis	36%	31%	6%	16%	20%	23%	20%	24%
Ankle sprains or joint injuries	20%	21%	9%	11%	17%	16%	6%	11%
Quadriceps strains	35%	20%	20%	18%	10%	17%	9%	3%
Calf strains	15%	15%	17%	32%	17%	13%	14%	6%
ALL INJURIES	20%	19%	14%	16%	15%	13%	14%	10%

Injury prevalence

Table 5 details the amount of missed playing time attributed to the most notable injury categories. In season 2004, hamstring also continued as the no. 1 injury in the game with respect to missed playing time, surpassing both groin injuries and knee ACL injuries.

Certain injury categories, such as concussion, knee and patella tendon injuries and calf strains exhibited historically very low prevalence during season 2004.

The only injury category which showed historically high injury prevalence in season 2004 was knee posterior cruciate ligament (PCL) injuries. The incidence of PCL injuries was not significantly different to that of past seasons, but two ruckmen underwent PCL reconstructions (which is a rarely performed procedure) early in the season and therefore missed many games. This increased the average severity and overall prevalence of knee PCL injuries. This injury category is discussed in detail later in this report.

Table 5 - Injury prevalence (missed games per club per season)

Body area	Injury type	1997	1998	1999	2000	2001	2002	2003	2004
Head/neck	Concussion	0.7	0.7	0.5	0.7	1.3	2.0	0.6	0.3
	Facial fractures	2.5	2.1	2.3	2.0	1.3	1.4	1.0	2.2
	Neck sprains	0.7	0.7	1.6	0.3	0.2	0.0	0.3	0.6
	Other head and neck injuries	0.3	0.2	0.4	0.8	1.5	0.2	0.7	0.2
Shoulder/arm /elbow	Shoulder sprains and dislocations	5.3	5.9	5.6	4.0	5.4	5.9	5.7	5.9
	A/C joint injuries	2.2	2.1	0.9	3.1	2.1	2.4	0.7	2.5
	Fractured clavicles	1.4	1.6	1.2	3.0	1.6	2.0	1.0	3.5
	Elbow sprains or joint injuries	0.7	1.2	0.2	0.1	0.4	0.3	0.4	0.7
	Other shoulder/arm/elbow injuries	2.4	1.9	0.3	1.3	1.3	4.0	1.6	1.6
Forearm/wrist/ hand	Forearm/wrist/hand fractures	4.1	5.4	5.9	5.6	2.8	3.1	2.6	3.9
	Other forearm/wrist/hand injuries	0.7	1.3	0.9	1.8	0.3	2.2	3.1	1.2
Trunk/back	Rib and chest wall injuries	2.5	1.0	1.8	1.0	0.5	1.3	1.5	1.1
	Lumbar and thoracic spine injuries	12.2	4.6	8.0	8.5	5.8	5.8	2.4	5.9
	Other trunk/back/buttock injuries	3.7	1.4	2.0	2.2	1.5	1.7	1.5	2.1
Hip/groin/thigh	Groin strains and osteitis pubis	17.4	13.9	9.4	7.5	13.6	15.8	13.6	13.3
	Hamstring strains	21.0	21.0	22.6	22.9	21.4	15.7	18.8	21.7
	Quadriceps strains	8.6	9.5	6.7	5.6	3.8	4.3	6.0	4.2
	Thigh and hip haematomas	2.4	1.8	1.5	1.8	0.6	1.9	0.5	1.7
	Other groin/hip/thigh injuries	1.7	0.5	2.3	1.5	1.7	1.2	1.5	2.6
Knee	Knee ACL	19.8	15.8	10.8	4.8	13.6	16.5	10.8	10.1
	Knee MCL	3.3	4.3	3.3	3.5	4.8	3.3	2.9	2.9
	Knee PCL	1.9	2.2	5.2	2.3	5.9	2.3	2.0	6.5
	Knee cartilage	4.0	5.6	5.3	8.6	12.5	6.0	7.0	6.1
	Patella injuries	0.9	1.6	0.8	1.8	0.8	2.5	0.6	0.1
	Knee and patella tendon injuries	2.4	1.6	3.9	3.9	2.5	3.7	2.9	0.9
	Other knee injuries	3.9	1.2	2.2	3.6	2.5	1.0	2.4	1.3
Shin/ankle/foot	Ankle sprains or joint injuries	7.2	6.9	3.9	6.8	4.3	5.9	5.3	6.7
	Calf strains	5.8	6.4	3.4	5.7	3.4	4.4	3.9	1.7
	Achilles tendon injuries	1.3	1.4	1.3	1.6	0.7	0.9	1.5	0.8
	Leg and foot fractures	2.6	5.4	8.8	4.6	7.2	7.9	3.0	3.7
	Leg and foot stress fractures	4.9	4.0	6.7	3.8	4.4	3.9	5.3	6.3
	Other leg/foot/ankle injuries	6.4	5.1	3.1	4.1	4.2	2.3	3.7	4.3
Medical illness	Medical illnesses	4.2	3.7	3.3	2.8	2.6	2.9	3.9	4.2
MISSED GAMES PER CLUB PER SEASON		159.2	141.9	135.9	131.8	136.4	134.7	118.7	131.0

ANALYSIS & DISCUSSION FOR SIGNIFICANT INJURY CATEGORIES

Knee anterior cruciate ligament (ACL) injuries

There have been 115 complete ACL injuries occurring in AFL matches (both senior and reserve grades) during seasons 1992-2004 inclusive, 27 with a mechanism involving direct contact to the knee or leg, and 88 with either no player to player contact or an indirect contact mechanism (which were designated ‘non-contact’ injuries). Of these 88, 35 involved a landing mechanism, 14 involved indirect contact through tackling with the remainder change of direction whilst running. In addition, there have been 58 ACL injuries in other (non-AFL) matches, 21 occurring during training sessions and 1 occurring in a listed player outside football. These occurrences are detailed in Table 6.

Table 6 - ACL injuries occurring each season in AFL players

ACL injuries occurring in listed players in:							
Season	AFL matches – Vic/Tas	AFL matches - northern	AFL reserves matches (Vic)	Other matches	Training sessions	Outside football	Total
1992	4	6	2	4	2	0	16
1993	3	0	2	2	1	0	7
1994	4	3	0	6	2	0	13
1995	7	4	1	2	1	0	14
1996	5	5	2	7	3	0	19
1997	11	3	4	3	2	0	21
1998	2	8	1	4	2	0	15
1999	1	3	2	2	0	0	8
2000	2	2		4	0	0	8
2001	4	7		6	2	0	17
2002	4	2		9	3	1	15
2003	4	1		6	1	0	11
2004	3	3		3	2	0	9
Total	54	47	14	58	21	1	173

Over recent seasons, great attention has been paid to the possible contribution of ground conditions to injury rates, particularly with respect to knee ACL injuries. The overall injury prevalence has been consistently higher in the teams based in northern states compared to teams based in Victoria and in games played earlier during the season (Table 7) ⁷. It has been hypothesized that perhaps grounds are generally harder in the northern venues, which might lead to greater injury rates, although investigation has shown that grounds in the northern venues are generally not harder than Victorian grounds ⁷⁻¹². Major AFL venues have taken Penetrometer readings prior to games to attempt to assess the risk of injury and its relationship to ground hardness ⁴⁹. However, the relationship found between injury and ground hardness to date seems to have been minimal ⁴⁹. The fact that efforts have been made, since this

was first postulated, to prepare grounds that were not excessively hard, has made this relationship more difficult to study.

Table 7 – Relative risk of ACL injury by month of year

Month	Matches	ACL injuries total	Non-contact	ACL rate
January	9	0	0	
February	130	8	7	30.8
March	244	12	11	24.6
April	613	27	22	22.0
Early-season total	996	47	40	23.6
May	641	17	11	13.3
June	531	16	13	15.1
July	628	16	11	12.7
August	638	14	10	11.0
September	199	5	3	12.6
October	2	0	0	0.0
Late-season total	2639	68	48	12.9

Recent research suggests that the grass types used on stadium fields and thatch depth, more so than ground hardness, may be more likely to be responsible for the ‘early-season’ and ‘warm-season’ biases for ACL injuries that have been previously noted¹³. It is unlikely that surface hardness (independent of shoe-surface traction) is the most important extrinsic risk factor for ACL injury across a variety of sports. Because the interactions of grass type, player choice of boot and shoe-surface traction are not well understood, it is still premature to make any strong recommendations about acceptable ground conditions with respect to safety in preventing ACL injuries. ACL injury rates have fallen over the past few years, but there is not enough comparative data to attribute this to either reductions in ground hardness, traction and/or the removal of cricket pitches at this stage. Perhaps some of these interventions have been successful in combination. There may be other confounding factors, such as individual club proprioceptive training programs, that could have contributed to the recent reduction in ACL injury incidence.

Knee posterior cruciate ligament (PCL) injuries

The rate of knee posterior cruciate ligament (PCL) injuries has varied from year to year although the total injury incidence has not particularly increased from 1997 to 2004 inclusive. However, this injury is the one major injury category which is more common and prevalent in a specific player position (the ruckman). Player position analysis and injury is not a major focus of the injury survey, as few players stick to a particular position over the course of an entire game. Running, marking, kicking, handpassing and contesting for possession are components of almost every position on the field. Aside from perhaps full forward and full back, the ruckman is the only position on the field with a unique task (ruck duels).

Table 8 - Key indicators for PCL injuries over the past eight seasons

Posterior cruciate injuries	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	0.6	0.3	0.7	0.5	1.0	0.4	0.5	0.7
Prevalence	1.9	2.2	5.2	2.3	5.9	2.3	2.0	6.5
Severity	3.3	7.4	7.2	4.8	5.9	5.9	4.4	9.0

Details regarding the incidence of specific PCL injuries are listed in Table 9. More ruckmen have suffered PCL injuries since 1999, and three to four per year have suffered this in the centre bounce ruck contest. At the same time fewer players appear to have suffered this injury in falls around the ground, which may reflect the improvement in ground preparation producing softer playing surfaces.

Table 9 – PCL injuries in ruckmen and all players 1992-2004

Year	New PCL injuries causing missed games	PCL Injuries in Ruckmen (total)	PCL Injuries in Ruckmen in centre bounces (total)
2004	13	6	5
2003	8	4	2
2002	7	3	3
2001	18	6	4
2000	8	4	4
1999	12	3	3
1998	5	2	2
1997	10	1	0
1996	10	1	1
1995	9	1	1
1994	8	2	2
1993	4	0	0
1992	7	0	0

New rules have been introduced to limit the ruckman's run up, with the introduction of a 10 metre outer circle. The rationale for this change is to reduce the momentum of any knee contact, while maintaining the spectacle of this unique contest, and thereby reducing the severity of any subsequent injury. It is expected that the trend of higher PCL injuries amongst ruckmen will be reversed, reducing the morbidity amongst ruckmen and extending their careers.

Hamstring injuries

Hamstring strains remain the most common injury in the AFL. Previous analysis of hamstring and other muscle strain data shows a high rate of recurrence^{6 14-16}. The current AFL data shows that management of these injuries has become more conservative over the last decade in the AFL. The mechanisms of hamstring injury in football are overstriding when sprinting, bending to pick up the ball while running, or attempting to break out of a tackle¹⁷. The risk of recurrence is high and persists for three months after return to play because players often return with subtle strength deficits and/or biomechanical compensations⁶. There is research identifying the role of MRI as a predictor for safe return to play (without recurrence) from hamstring strains through the measurement of the size of the lesion¹⁸.

In a similar fashion to injuries overall, Table 10 shows that hamstring strains have decreased in incidence, prevalence and recurrence rate over recent seasons, with little change in overall average hamstring injury severity.

Table 10 - Key indicators for hamstring strains over the past eight seasons

Hamstring strains	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	6.8	6.4	6.8	5.8	6.1	4.5	5.9	6.3
Prevalence	21.0	21.0	22.6	22.9	21.4	15.7	18.8	21.7
Severity	3.1	3.3	3.3	3.9	3.5	3.5	3.2	3.4
Recurrence rate	37%	36%	30%	39%	25%	30%	27%	22%

Concussion

Concussion rates have been low and, if anything, declining over the last decade. It is acknowledged that the 'true' incidence of minor concussions is underestimated by the injury survey, in that there are a number of clinical cases of concussion that occur but do not result in games being missed, which therefore do not satisfy the injury survey definition. However, it is very apparent that these cases are not leading to long-term problems with this diagnosis. Whilst the injury survey in its current form cannot be used to assess the number of players who remain on the field, or return to the field, having suffered a concussion in the same game, the lack of apparent long-term consequences of concussion management vindicates the current management of AFL medical staff.

Table 11 - Key indicators for concussion (injuries causing missed games) over the past eight seasons

Concussion	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	0.6	0.7	0.5	0.6	0.7	0.7	0.3	0.3
Prevalence	0.7	0.7	0.5	0.7	1.3	2.0	0.6	0.3
Severity	1.1	1.0	1.1	1.1	1.8	3.1	1.7	1.0

CONCLUSIONS

Table 12 - Key indicators for all injuries over the past eight seasons

All injuries	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	41.9	40.3	36.9	37.4	35.8	34.3	34.1	34.9
Prevalence	159.2	141.9	135.9	131.8	136.4	134.7	118.6	131.0
Severity	3.8	3.5	3.7	3.5	3.8	3.9	3.5	3.7
Recurrence rate	20%	19%	14%	16%	15%	13%	14%	10%

Table 12 shows that from 1997 to 2004, injury incidence and injury recurrence rate have gradually decreased. Injury severity (average number of games missed per new injury) has stayed fairly constant. Because the recurrence rate is dropping, this indicates that the average new injury is keeping players out for longer, but the longer new injury recovery time is being counterbalanced by the reduced time missed from recurrent injuries.

It is pleasing to report show the gradual decreases in injury incidence and prevalence, notwithstanding a higher prevalence in 2004 compared to 2003. Certainly the ongoing trends in the injury rates vindicate the approach the AFL is taking towards injury surveillance and research. The AFL is one of the few professional sports in the world (if not the only one) which can say it has successfully followed the recommend Van Mechelen paradigm for sports injury prevention⁵ (Table 1). Possible variables that may have positively affected injury rates include: (1) the program of ground condition surveillance by all major venues with a resulting greater focus on safety (2) the specific move by grounds to promote rye grass use as the predominant species (3) video surveillance and low tolerance to foul or illegal play, showing a continuing influence on reducing concussions (4) the establishment of a research board with a knowledge increase from the specific projects to have arisen out of this funding (5) improved management and prevention of injuries at club level (6) changes to player footwear that have occurred over the past 7 years (7) changes in styles of play that have occurred over the past 7 years.

The AFL injury profile continues to be consistently defined and published in both the sports medicine scientific literature and in public media releases³. Hamstring injuries, knee ACL injuries and groin injuries (including osteitis pubis) are consistently the most prevalent injuries in AFL players.

The major findings of the 2004 injury survey are that:

- (1) Ongoing rates of injuries remain low in historical terms.
- (2) Recent trends in PCL injuries in ruckmen justify the recent centre circle rule change.
- (3) Concussion rates (including severity and recurrence rates) are low, vindicating current management in AFL players

Acknowledgments:

The authors and AFL Medical Officers would like to acknowledge the following people who contributed to the survey in 2004:

Peter Waldie, Trevor Jacques and Drs Brian Sando and Andrew Potter (trainer, medical services coordinator and doctor, Adelaide), Peter Stanton (physiotherapist, Brisbane), Dr Ben Barresi (doctor, Carlton), Dr Andrew Jowett, Gary Nicholls (doctor and physiotherapist, Collingwood), Bruce Connor (physiotherapist, Essendon), Jeff Boyle and Norm Tame (physiotherapist and football staff, Fremantle), Dr Jeanne McGivern and Dr Hugh Seward (doctors, Geelong), Chris Ward (physiotherapist, Hawthorn), Dr Andrew Daff (doctor, Melbourne), Dr Con Mitropolous (Kangaroos), Dr Peter Barnes (doctor, Port Adelaide), Dr Greg Hickey (doctor, Richmond), Dr Ian Stone (doctor, St. Kilda), Matt Cameron (physiotherapist, Sydney), Paul Tucker and Bill Sutherland (doctor and trainer, West Coast Eagles), Dr Gary Zimmerman (doctor, Western Bulldogs), Dr Peter Harcourt and Dr Harry Unglik (AFL Medical Officers), Rod Austin, Jill Lindsay and Andrew Demetriou (AFL administration), Ian Chivers and David Aldous (Institute of Land and Food Resources, University of Melbourne), Champion data and all those acknowledged in the injury reports for previous years (particularly Dr Tim Wood who had a major administrative role during the early years of the injury survey) and all AFL Ground managers and ground staff.

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